ABSTRACT OF THE DISCLOSURE

Methods, apparatus and systems for implementing an algorithm for N-symbol noncoherent processing of M-ary DPSK signals in a pilotless, wireless system is provided. The algorithm is carried out with (N-1) recurrent steps (iterations) plus a decision step. Each iterative step includes simple trigonometrical transformation of quadrature components of the current symbol and summation of the transforms with results of the previous step. A final N-symbol decision regarding the current transmitted symbol corresponds to the vector of maximum length, calculated after the (N-1)-th step of the iterative procedure. The general algorithm is optionally implemented with one or more intersymbol processors, one or more memory blocks for saving results of the intersymbol processors, and a decision block. In addition, shift registers for quadrature components of the received signal may be utilized.